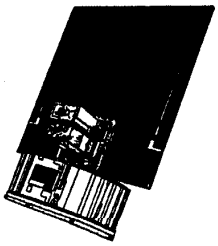
OSO 8

Orbiting Solar Observatory 8 (I)

Spacecraft Sketch	Mission Objective
	The primary objectives of the Orbiting Solar Observatory (OSO 8) are to: 1) investigate the Sun's lower corona, the chromosphere, and their interface in the x-ray and ultraviolet spectral regions, in order to better understand the transport of energy from the photosphere into the corona; and 2) evaluate spacecraft operation to support attainment of the program objectives. Secondary objectives are to: 1) study the interaction between the solar electromagnetic and particle radiation and the earth's environment; and 2) investigate the background component of cosmic X-rays.

TYPE OF MISSION	PROGRAM OFFICE	PROJECT LEAD CENTER	MANAGEMENT APPROACH	S/C CONTRACTOR	I&T CONTRACTOR
ASTROPHYSICS	SPACE SCIENCE & APPLICATIONS	GSFC	HYBRID	HUGHES	HUGHES

Payload Description

The Orbiting Solar Observatory (OSO-8) payload is divided into two sections: 1) an oriented, pointing "Sail," that contains the Pointed Instruments Assembly (PIA) which houses and points two experiments continually toward the sun, and also supports the solar array and other required subsystems; and 2) a rotating "Wheel" which spins about an axis perpendicular to the pointing, direction of the Sail and carries five rotating experiments, plus associated supporting spacecraft subsystems. The command system allows processing of a minimum of 512 ground-based commands. Sensor data are simultaneously recorded on tape and transmitted by PCM/PM telemetry. The pointing control system permits pointed experiments to scan the region of the solar disk in square 40- or 60-arc-minute raster patterns. The pointed section is also capable of being commanded to select and scan square 1- or 5-arc-minute regions on the solar disk.

INSTRUMENT NAME	ACRONYM	PI AFFILIATION	PRINCIPAL INVESTIGATOR	I&T CONTRACTOR
CHROMOSPHERE FINE STRUCTURE	NONE	UNIV PARIS	R. M. BONNET	FOREIGN
COSMIC X-RAY SPECTROSCOPY	NONE	GSFC	E. A. BOLDT	GSFC
EXTREME ULTRAVIOLET EMISSIONS	NONE	NRL	C. S. WELLER	NRL
HIGH ENERGY CELESTIAL X-RAYS	NONE	GSFC	K. J. FROST	GSFC
MAPPING X-RAY HELIOMETER	MXRH	LPARL	L. W. ACTON	LPARL
SOFT X-RAY BACKGROUND RADIATION	NONE	UNIV WISCONSIN	W. L. KRANSHAAR	UNIV WISCONSIN
STELLAR & SOLAR X-RADIATION	NONE	COLUMBIA UNIV	R. NOVICK	COLUMBIA UNIV
UV SPECTROMETER	NONE	UNIV COLORADO	E. C. BRUNER	UNIV COLORADO

Instrument Descriptions
The OSO 8 Chromosphere Fine Structure instrumentation consists of a spectrometer and a Cassegrain telescope with a fine pointing system. A plane mirror with a pinhole in its center is located in front of the Cassegrain focus which folds the beam in the direction of the instrument fine pointing control system. The light passing through the pinhole is focused on the slit of the spectrometer.
The OSO 8 Cosmic X-ray Spectroscopy, Data Point 503, consists of three gas proportional counters and associated electronics. There are two basic modes of operation. In the storage mode energy information is stored from the three detectors in three separate memories (histogram generators) and read out periodically into telemetry. In the real time, mode energy information from one detector is read out event by event.
The OSO 8 Extreme Ultraviolet Emissions, Data Point 505, consists of two photometers designed to measure EUV resonance radiation. Each photometer consists of a continuous-channel electron multiplier used as a photon detector, together with a thin metal film or magnesium fluoride-oxygen cell which serves as a optical bandpass filter.
The OSO 8 High Energy Celestial X-rays, Data Point 504, consists of cesium iodide (sodium) scintillation crystals actively shielded by other cesium iodide (sodium) crystals. Detection of X-rays is collimated by parallel holes through the shield crystals via photoelectric interactions, Compton scattering and/or pair production in the central crystal.
The OSO 8 Mapping X-Ray Heliometer (MXRH), Data Point 127, is designed and built by the Lockheed Palo Alto Research Laboratory to measure the location, spectrum, and intensity of intermediate energy X-rays from individual solar active regions and to acquire significant data about extra-solar X-ray sources.
The OSO 8 Soft X-ray Background Radiation, Data Point 128, is developed by the University of Wisconsin to study the galactic latitude dependence of the X-ray background radiation. Low background noise detectors are specifically designed to map low energy X-ray emissions at high sensitivity. The instrument also includes SiY proportional counters and two sets of collimators.
The OSO 8 Stellar and Solar X-ray Radiation, Data Point 129, is developed at Columbia University to provide a continuous monitor of the sun's emission in the X-ray region, to obtain a complete spectrum of the sun every 12 seconds during flares, and to obtain high resolution spectra of many celestial X-ray sources.
The OSO 8 UV Spectrometer, Data Point 126, is designed and built by the University of Colorado to measure solar UV line shapes.

Launch
6/21/75